

## CLAIMS:

1. A data processing unit (3) for registering a first image (A1) and a second image (A2) of an object (2), the data processing unit (3) being set up to:
  - segment the images (A1, A2) automatically into various object constituents (a, b, c);
  - register only those image areas (B1, B2) of selected object constituents (b) which are relevant to a predetermined task.
2. A data processing unit (3) for registering a first image (A1) and a second image (A2) of an object (2), in particular a data processing unit (3) as claimed in claim 1, which is set up to:
  - segment the images (A1, A2) automatically into various object constituents (a, b, c);
  - register the image areas (B1, B2) of various object constituents (a, b, c) using individually assigned registration methods.
3. A data processing unit as claimed in claim 1 or 2, characterized in that the segmented object constituents (a, b, c) are automatically classified.
4. A data processing unit as claimed in claim 1 or 2, characterized in that a linear registration is performed on several resolution levels, rigid bodies being registered on a coarse grid followed by affine registration on a finer grid.
5. A data processing unit as claimed in claim 1 or 2, characterized in that the first image (A1) and/or the second image (A2) are/is (a) two- or three-dimensional computer tomogram(s), in particular an X-ray photograph or a magnetic resonance image.
6. A data processing unit as claimed in claim 1 or 2, characterized in that the object is the chest (2) of a patient, the lungs (b) being the object constituent relevant to a tumor diagnosis.

7. A data processing unit as claimed in claim 1 or 2, characterized in that the segmentation is performed using a watershed transformation.

5 8. An examination apparatus, comprising:  
- an imaging device (1) for producing images (A1, A2) of an object (2);  
- a data processing unit (3) as claimed in any one of the claims 1 to 7, coupled  
to the imaging device (1).

10 9. A method for registering a first image (A1) and a second image (A2) of an object (2), comprising the following steps:  
- automatic segmentation of the images (A1, A2) into various object constituents (a, b, c);  
- registration of the image areas (B1, B2) of selected object constituents (b)  
15 relevant to a predetermined task.

10. A method for registering a first image (A1) and a second image (A2) of an object (2), comprising the following steps:  
- automatic segmentation of the images (A1, A2) into various object constituents (a, b, c);  
- registration of the image areas (B1, B2) of various object constituents (a, b, c)  
20 using individually assigned registration methods.